Physical Structures and Systems Interagency Working Group

Dr. James E. Hill, Chair

October 29, 2003

History

- President Clinton established the NSTC by Executive Order 12881 on November 23, 1993. It replaced the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET).
- The Construction and Building Subcommittee was created on March 18, 1994 under the Committee on Civilian Industry Technology

PS&S Membership

- DEPARTMENT OF COMMERCE
- DEPARTMENT OF AGRICULTURE
- DEPARTMENT OF DEFENSE
- DEPARTMENT OF ENERGY
- DEPARTMENT OF HEALTH AND HUMAN SERVICES
- DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
- DEPARTMENT OF INTERIOR
- DEPARTMENT OF LABOR
- DEPARTMENT OF TRANSPORTATION
- DEPARTMENT OF VETERANS AFFAIRS
- ENVIRONMENTAL PROTECTION AGENCY
- FEDERAL EMERGENCY MANAGEMENT AGENCY
- GENERAL SERVICES ADMINISTRATION
- NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
- NATIONAL SCIENCE FOUNDATION
- DEPARTMENT OF HOMELAND SECURITY
- WHITE HOUSE OFFICE OF SCIENCE AND TECHNOLOGY
- WHITE HOUSE OFFICE OF MANAGEMENT AND BUDGET

Shaded organizations are without an identified representative

Past Products/Actions

- National Construction Goals and Baseline Studies
- Construction Materials, CONMAT Consortium
- Partnership for Advancing Technology for Housing (PATH)
- National Conference of States on Building Codes and Standards (NCSBCS) - Regulatory Streamlining
- Plan for “Stewardship of Commercial/Institutional Facilities”
- National Alliance for Building Regulatory Reform, and Critical Buildings Database, NCSBCS
- FIATECH – a consortium devoted to fully integrated and automated life cycle construction project processes

Physical Structures and Systems Chartered Functions

- Support the National Strategy for the Physical Protection of Critical Infrastructures and Key Assets: identify and prioritize R&D needs to develop and protect the Nation's infrastructure, in part by gaining input from the private sector.

- Define Research and Development Needs and Priorities: Review the state of the art of technology and technical issues (including performance and security) to identify common R&D needs and to recommend priorities. The IWG partners with private sector bodies to identify and develop potential strategies.

- Formulate R&D Policy, Program and/or Legislative Proposals. Based on identified needs and assessments of agency and private sector capabilities and activities, the IWG will recommend policy and/or program proposals to the Infrastructure Subcommittee for consideration.

- Plan, Develop, and Coordinate Multi-Agency R&D Programs. When warranted, the IWG may be called upon to draft strategic plans or program implementation plans for carrying out programs. the IWG provide a level of oversight or coordination of multi-agency programs and maintain liaison with key private sector bodies.

- Support and/or Participate in Private Sector Initiatives: participate in private sector initiatives and in public-private technology road mapping efforts.

Partnerships with the Private Sector

- The Infrastructure Security Parthernship (TISP)
- National Institute of Building Sciences (NIBS)
- Construction Industry Institute (CII)
- International Code Council (ICC)
- Civil Engineering Research Foundation (CERF)
- FIATECH (a consortium devoted to fully integrated and automated life cycle construction project processes)
- Owner Association Alliance (including International Facility Managers Association (IFMA)
- Building Owners and Managers Association (BOMA), etc.)
- International Council for Building Documentation and Research (CIB), and others.
- American Public Works Association (APWA)
- National Association of Homebuilders Research Foundation (NAHBRF)
- NCSBCS

The IWG may interact with and receive ad hoc advice from these and other private-sector groups as consistent with the Federal Advisory Committee Act (FACA).

PS&S FY04 Program Plan

- Develop the *Critical Physical Infrastructure R&D Report* - January 2004, and organize a NSF CIP R&D Needs Workshop – Spring 2004.
- Promote/Support development of the "interoperability" technical specifications for building regulatory system software procurements (RFPs)
- PATH: Incorporate R&D for multi-hazard protection, advanced materials, and water system decontamination for residential housing into the *Critical Physical Infrastructure R&D Report* – January 2004
- Organize a Geospatial/GIS research program overview with speakers from NASA, DOT, USDA/FS, and USCG – November 2004
- Organize a *Technical Program Overview Workshop* on R&D Technical Activities involving all PS&S member-agency programs – Spring 2004
- Partner with the NRC Federal Facilities Council in roadmapping a unified methodology for infrastructure condition (aging) and CIP risk assessment – Summer 2004
- Provided $10k to the Federal funding proposal for The Infrastructure Security Partnership (TISP) – October 2004

Current Status

- New PS&S Charter awaiting approval
- FY04 Program Plan established
- Established close coordination with IS leadership and DHS
- Reconstituted PS&S IWG leadership positions (Hill, Domich)
- Promoted Federal Funding Proposal for The Infrastructure Security Partnership (TISP)

End of Presentation

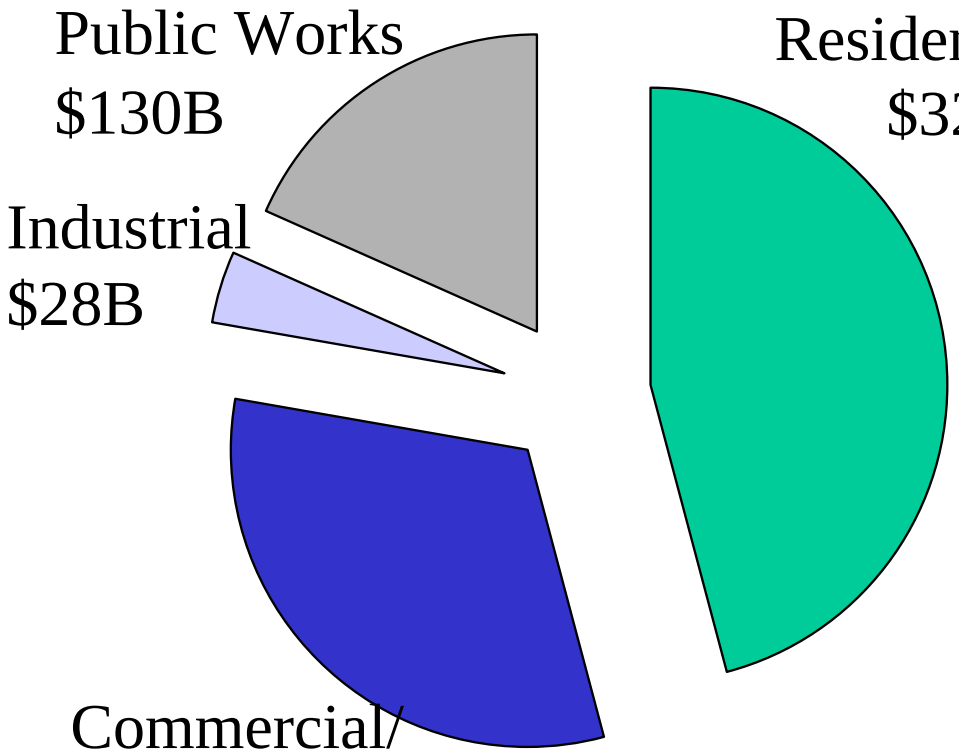
- Supplemental slides follow..

U.S. Investment in Construction Technology

- Construction R&D < 0.5% of sales
- All industries average ~ 3.7% of sales
- Annual Federal R&D for construction ~ $500 million
- Many foreign competitors invest more

Context - Construction and Buildings is Big Business

$1.1 Trillion Domestic, $3.2 Trillion Global



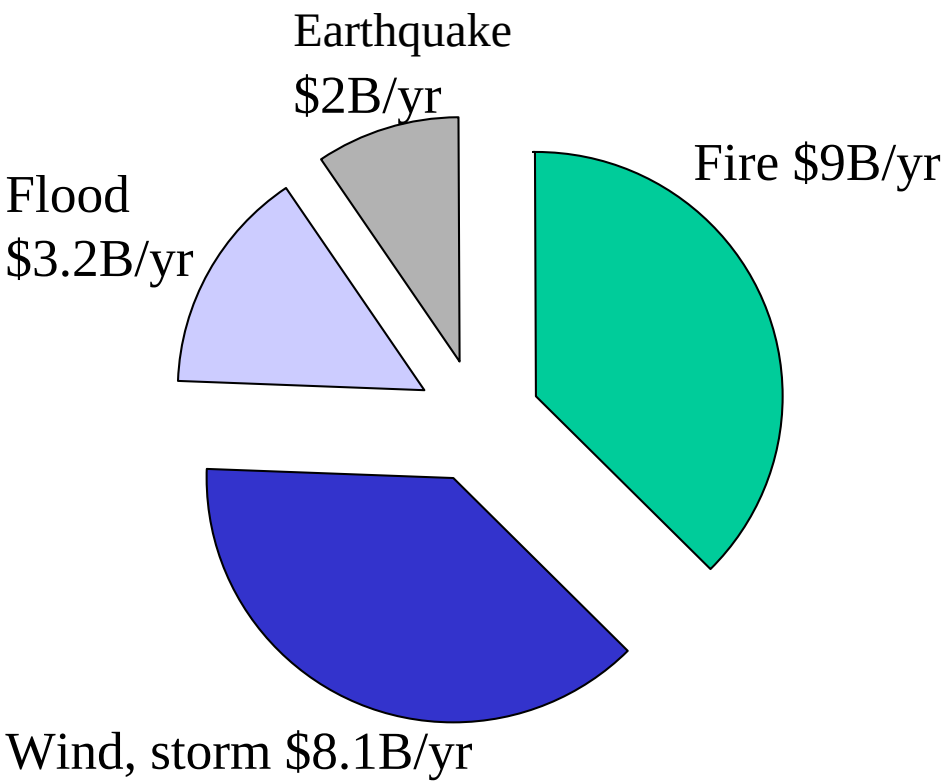
(Est. 1999 data)

- Value of construction put in place….$710B
- Renovation…..$282B
- Maint. & repr.$148B
- 109M homes

(Materials……..$353B)

Context - Fire and Disasters have Debilitating Impacts

Average Property/Insured Loss



- Fire Costs Economy an est. $130B/yr.

Fire Deaths	4 ,050
Injuries -	
Civilian	23,750
FireFighters	87,500

  - Single event est. as much as $80-$200B

(e.g. wind, earthquake)

(data from various sources)

Vision for the Industries of Construction

- High quality constructed facilities support the competitiveness of all U.S. industries and everyone's quality of life.
- U.S.. industry leads in quality and economy in the global marketplace for construction products and services.
- The industries of construction and constructed facilities are energy efficient, environmentally benign, safe and healthful and sustainable in use of resources.
- Natural and manmade hazards do not cause disasters.

National Construction Goals

(Baseline Report Published ★)

- 50% reduction in delivery time. ★
- 50% reduction in operation, maintenance and energy. ★
- 30% increase in productivity and comfort.
- 50% fewer occupancy-related illnesses and injuries.
- 50% less waste and pollution.
- 50% more durability and flexibility.
- 50% fewer construction illnesses and accidents. ★

Assuming…

  - Baseline is average practice in 1994
  - Target is proven practices available in 2003
  - Life cycle costs of ownership to be reduced substantially